What is claimed is:

1. A method for increasing the sensitivity of tumor cells to chemotherapeutic agents, comprising the step of introducing an anticode oligomer to tumor cells which express the bcl-2 gene under conditions sufficient to reduce bcl-2 gene expression in said tumor cells.

2. The method of claim 1 wherein said anticode oligomer is an antisense oligonucleotide or an analog thereof.

3. The method of claim 1 wherein the step of introducing comprises:

(a) transfecting said tumor cells with a vector comprising a sequence that encodes said anticode oligomer; and

(b) expressing said anticode oligomer.

4. The method of claim 1 wherein said anticode oligomer has a sequence which binds with a sequence portion of RNA expressed from the bcl-2 gene, which RNA comprises a coding region essentially for bcl-2 protein.

5. The method of claim 4 wherein said sequence portion is a strategic site in pre-mRNA expressed from said bcl-2 gene.

6. The method of claim 5 wherein said anticode oligomer is substantially complementary to and binds to a strategic site in said pre-mRNA.

7. The method of claim 1 wherein said anticode oligomer is brought into contact with said cells under conditions where the concentration of said anticode oligomer is from about 0.001 to about 100 micromolar.

8. A method for killing tumor cells, comprising the steps of:

(a) introducing an antisense anticode oligomer to tumor cells which express the bcl-2 gene under conditions sufficient to reduce bcl-2 gene expression in said tumor cells; and

(b) contacting said tumor cells with an amount of at least one chemotherapeutic agent sufficient to kill a portion of said tumor cells, whereby the portion of tumor cells killed is greater than the portion which would have been killed by the same amount of said chemotherapeutic agent in the absence of said introduction of said anticode oligomer.

9. The method of claim 8 wherein said chemotherapeutic agent is selected from the group of chemotherapeutic agents consisting of antimetabolites, alkylating agents, plant alkaloids, and antibiotics.

10. The method of claim 8 wherein the step of introducing comprises:

(a) transfecting said tumor cells with a vector comprising a sequence that encodes an anticode oligomer; and

(b) expressing said anticode oligomer.

11. The method of claim 8 wherein said anticode oligomer has a sequence which binds with a sequence portion of RNA expressed from the bcl-2 gene, which RNA comprises a coding region essentially for bcl-2 protein.

12. The method of claim 11 wherein said sequence portion is a strategic site in pre-RNA expressed from said bcl-2 gene.

13. The method of claim 12 wherein said anticode oligomer is substantially complementary to and binds to a strategic site in said pre-mRNA.

14. The method of claim 8 wherein said anticode oligomer is brought into contact with said cells under conditions where the concentration of said anticode oligomer is from about 0.001 to about 100 micromolar.

15. A method of inhibiting the growth of cancer cells which express the human bcl-2 gene, comprising the steps of:

(a) providing an anticode oligomer which binds with a sequence portion of RNA expressed from the human bcl-2 gene, which anticode oligomer when brought in contact with tumor cells expressing the human bcl-2 gene, has the property of reducing the expression of at least one bcl-2 gene product; and

(b) contacting said cells with said anticode oligomer under conditions sufficient to inhibit growth of said cells.

16. The method of claim 15 wherein said anticode oligomer is an antisense oligonucleotide or analog thereof.

17. The method of claim 15 wherein said sequence portion is a strategic site in pre-mRNA expressed from said bcl-2 gene.

18. The method of claim 17 wherein said anticode oligomer is substantially complementary to and binds to a strategic site in said pre-mRNA.

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19. The method of claim 15 wherein said anticode oligomer is brought into contact with said cells under conditions where the concentration of said anticode oligomer is from about 0.001 to about 100 micromolar.

20. An anticode oligomer useful for inhibiting cells expressing the human bcl-2 gene, comprising an anticode oligomer which binds with a sequence portion of RNA expressed from the human bcl-2 gene, which anticode oligomer, when brought in contact with tumor cells expressing the human bcl-2 gene, has the property of reducing the expression of at least one bcl-2 gene product and thereby inducing programmed cell death of said tumor cells.

21. The anticode oligomer of claim 20 wherein said anticode oligomer is an antisense oligonucleotide or an analog thereof.

22. The anticode oligomer of claim 20 wherein said sequence portion is a strategic site in pre-mRNA expressed from said bcl-2 gene.

23. The anticode oligomer of claim 22 wherein said anticode oligomer is substantially complementary to and binds to a strategic site in the pre-mRNA.

24. A composition useful for inhibiting cells expressing the human bcl-2 gene, comprising an anticode oligomer which binds with a sequence portion of RNA expressed from the human bcl-2 gene, which anticode oligomer, when brought in contact with tumor cells expressing the human bcl-2 gene, has the property of reducing the expression of at least one bcl-2 gene product and thereby inducing programmed cell death of said tumor cells, together with a pharmaceutically acceptable carrier.

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25. The composition of claim 24 wherein said anticode oligomer is an antisense oligonucleotide or an analog thereof.

26. The composition of claim 24 wherein said sequence portion is a strategic site in pre-mRNA expressed from said bcl-2 gene.

27. The composition of claim 25 wherein said anticode oligomer is substantially complementary to and binds to a strategic site in said pre-mRNA.

28. A vector for transfecting human tumor cells comprising a nucleotide sequence that encodes an anticode oligomer which reduces expression from the human bcl-2 gene in said tumor cells.

29. The vector of claim 28 wherein said antícode oligomer is an oligonucleotide which binds with a sequence portion of RNA expressed from the human bcl-2 gene, which antisense oligonucleotide has the property of reducing the expression of at least one bcl-2 gene product and thereby inducing programmed cell death of said tumor cells.

30. The vector of claim 29 wherein said sequence portion is a strategic site in pre-mRNA expressed from said bcl-2 gene.

31. The vector of claim 30 wherein said antisene oligonucleotide is substantially complementary to and binds to a strategic site in the pre-mRNA.

Add B

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